

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): An image generating device for generating a still image from a plurality of frame images contained in a video sequence, the device comprising:

a synthesis object setting module for setting, from among areas included in frame images other than a reference frame image selected from among the plurality of frame images, one ~~ore~~ or more areas as object frame image areas for synthesis, the object frame image areas being selected according to a predetermined rule relating to a reference frame image area within the reference frame image;

a comparison reference extracting module for extracting one comparison reference frame image area from among the reference frame image area and the object frame image areas for synthesis;

a target extracting module for extracting one target frame image area from among the object frame image areas for synthesis other than the comparison reference frame image area;

a comparing module for comparing the comparison reference frame image area with the target frame image area to calculate a relative image shift amount between the comparison reference frame image area and the target frame image area, the calculating of the relative image shift amount including detecting a shift (u, v) of the target frame image area with respect to the comparison reference frame image area, and calculating a local shift amount (Δu , Δv) as absolute values of a difference between (u, v) and integers closest to (u, v);

an excluding module for excluding the target frame image area from the object frame image areas for synthesis if the relative image shift amount is less than a predetermined value; and

a synthesized image generating module for synthesizing the reference frame image area and the object frame image areas for synthesis to create a synthesized image area of a still image that has a higher resolution than the frame images,

wherein each module in the image generating device is executed by an integrated circuit.

Claim 2 (Previously Presented): An image generating device according to claim 1, further comprising:

a setting module for setting as the reference frame image area an area within the reference frame image, to serve as a reference for synthesis; and

a frame number controlling module for repeating processes of the synthesis object setting module, the comparison reference extracting module, the object extracting module, the comparing module, and the excluding module, until the total number of the reference frame image area and the object frame image areas for synthesis reaches a predetermined number.

Claim 3 (Original): An image generating device according to claim 2, further comprising

a specification receiving module for receiving specification of the reference frame image,

wherein the setting module sets the specified frame image as the reference frame image.

Claim 4 (Previously Presented): An image generating device according to claim 1, wherein

the comparison reference extracting module sets the reference frame image area as the comparison reference frame image area.

Claim 5 (Previously Presented): An image generating device according to claim 1, further comprising

an eliminating module for eliminating, from among the object frame image areas for synthesis, an area of frame image for which a characteristic of the frame image area meets a predetermined condition.

Claim 6 (Canceled).

Claim 7 (Previously Presented): An image generating device according to claim 1, wherein the comparing module comprises:

a frame shift calculating module for calculating the image shift amount of a target frame image containing the target frame image area, with respect to a comparison reference frame image containing the comparison reference frame image area; and

an area shift calculating module for calculating the image shift amount of the target frame image area with respect to the comparison reference frame image area, based on the image shift amount calculated by the frame shift calculating module.

Claims 8 and 9 (Canceled).

Claim 10 (Previously Presented): An image generating device according to claim 1, wherein the reference frame image area and the object frame image area for synthesis are areas derived by dividing each frame image in an identical manner; and

the target extracting module extracts a target frame image area at a same location corresponding to the comparison reference frame image area.

Claim 11 (Currently Amended): An image generating device for generating a still image from a plurality of frame images contained in a video sequence, wherein if a relative image shift amount calculated by comparing a reference frame image area which is an area serving as a reference for synthesis and contained in a reference frame image which is one of the plurality of frame images, with a comparison target frame image area which is one of areas contained in the plurality of frame images, is less than a predetermined value, the image generating device excludes the comparison target frame image area from the synthesis of the still image, and wherein the calculating of the relative image shift amount includes detecting a shift (u, v) of the target frame image area with respect to the comparison reference frame image area, and calculating a local shift amount $(\Delta u, \Delta v)$ as absolute values of a difference between (u, v) and integers closest to (u, v) .

Claim 12 (Currently Amended): An image generating method for generating a still image from a plurality of frame images contained in a video sequence, the method comprising the steps of:

- (a) setting, from among areas included in frame images other than a reference frame image selected from among the plurality of frame images, one or more areas as object frame image areas for synthesis, the object frame image areas being selected according to a predetermined rule relating to a reference frame image area within the reference frame image;
- (b) extracting one comparison reference frame image area from among the reference frame image area and the object frame image areas for synthesis;
- (c) extracting one target frame image area from among the object frame image areas for synthesis other than the comparison reference frame image area;
- (d) comparing the comparison reference frame image area with the target frame image area to calculate a relative image shift amount between the comparison reference frame image area and the target frame image area, the calculating of the relative image shift amount including detecting a shift (u, v) of the target frame image area with respect to the comparison reference frame image area, and calculating a local shift amount (Δu , Δv) as absolute values of a difference between (u, v) and integers closest to (u, v);
- (e) excluding the target frame image area from the object frame image areas for synthesis if the relative image shift amount is less than a predetermined value; and
- (f) synthesizing the reference frame image area and the object frame image areas for synthesis to create a synthesized image area of a still image that has a higher resolution than the frame images.

Claim 13 (Previously Presented): An image generating method according to claim 12, further comprising the steps of:

setting as the reference frame image area an area within the reference frame image, to serve as a reference for synthesis; and

(g) repeating processes of the step (a), the step (b), the step (c), the step (d), and the step (e) until the total number of the reference frame image area and the object frame image areas for synthesis reaches a predetermined number.

Claim 14 (Original): An image generating method according to claim 13, further comprising the step of:

receiving specification of the reference frame image,

wherein the step of setting the reference frame image area includes the step of setting the specified frame image as the reference frame image.

Claim 15 (Previously Presented): An image generating method according to claim 12, wherein the step (b) includes the step of setting the reference frame image area as the comparison reference frame image area.

Claim 16 (Previously Presented): An image generating method according to claim 12, further comprising the step of:

eliminating, from among the object frame image areas for synthesis, an area of frame image for which a characteristic of the frame image area meets a predetermined condition.

Claim 17 (Canceled).

Claim 18 (Previously Presented): An image generating method according to claim 12, wherein the step (d) comprises the steps of:

calculating the image shift amount of a target frame image containing the target frame image area, with respect to a comparison reference frame image containing the comparison reference frame image area; and

calculating the image shift amount of the target frame image area with respect to the comparison reference frame image area, based on the image shift amount.

Claims 19 and 20 (Canceled).

Claim 21 (Previously Presented): An image generating method according to claim 12, wherein the reference frame image area and the object frame image area for synthesis are areas derived by dividing each frame image in an identical manner; and the step (c) includes the step of extracting a target frame image area at a same location corresponding to the comparison reference frame image area.

Claim 22 (Currently Amended): An image generating method for generating a still image from a plurality of frame images contained in a video sequence, wherein if a relative image shift amount calculated by comparing a reference frame image area which is an area serving as a reference for synthesis and contained in a reference frame image which is one of the plurality of frame images, with a comparison target frame image area which is one of areas contained in the plurality of frame images, is less than a predetermined value, the method excludes the comparison target frame image area from the synthesis of the still image, and wherein the calculating of the relative image shift amount includes detecting a shift (u, v) of the target frame image area with respect to the comparison reference frame image area, and calculating a local shift amount (Δu , Δv) as absolute values of a difference between (u, v) and integers closest to (u, v).

Claim 23 (Currently Amended): A computer program stored on a computer readable medium for generating a still image from a plurality of frame images contained in a video sequence, the computer program comprising:

a synthesis object setting program for causing a computer to set, from among areas included in frame images other than a reference frame image selected from among the plurality of frame images, one or more areas as object frame image areas for synthesis, the object frame image areas being selected according to a predetermined rule relating to a reference frame image area within the reference frame image;

a comparison reference extracting program for causing the computer to extract one comparison reference frame image area from among the reference frame image area and the object frame image areas for synthesis;

a target extracting program for causing the computer to extract one target frame image area from among the object frame image areas for synthesis other than the comparison reference frame image area;

a comparing program for causing the computer to compare the comparison reference frame image area with the target frame image area to calculate a relative image shift amount between the comparison reference frame image area and the target frame image area, the calculating of the relative image shift amount including detecting a shift (u, v) of the target frame image area with respect to the comparison reference frame image area, and calculating a local shift amount (Δu , Δv) as absolute values of a difference between (u, v) and integers closest to (u, v);

an excluding program for causing the computer to exclude the target frame image area from the object frame image areas for synthesis if the relative image shift amount is less than a predetermined value; and

a synthesized image generating program for causing the computer to synthesize the reference frame image area and the object frame image areas for synthesis to create a synthesized image area of a still image that has a higher resolution than the frame images.

Claim 24 (Currently Amended): A computer program stored on a computer readable medium for generating a still image from a plurality of frame images contained in a video sequence, the computer program causing a computer to execute a process wherein if a relative image shift amount calculated by comparing a reference frame image area which is an area serving as a reference for synthesis and contained in a reference frame image which is one of the plurality of frame images, with a comparison target frame image area which is one of areas contained in the plurality of frame images, is less than a predetermined value, the process excludes the comparison target frame image area from the synthesis of the still image, and wherein the calculating of the relative image shift amount includes detecting a shift (u, v) of the target frame image area with respect to the comparison reference frame image area, and calculating a local shift amount (Δu , Δv) as absolute values of a difference between (u, v) and integers closest to (u, v).